



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/536,568	10/24/2005	Christoph Brabec	21928-018US1	2161
26161	7590	05/16/2008		
FISH & RICHARDSON PC				
P.O. BOX 1022				
MINNEAPOLIS, MN 55440-1022				
EXAMINER				
INGHAM, JOHN C				
ART UNIT		PAPER NUMBER		
2814				
MAIL DATE		DELIVERY MODE		
05/16/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/536,568

**Applicant(s)**

BRABEC ET AL.

**Examiner**

JOHN C. INGHAM

**Art Unit**

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 February 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3,5-9,12,14-31,33,34,38-40,43-45 and 47-49 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,5-9,12,14-31,33,34,38-40,43-45 and 47-49 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-848)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. The amendments filed 14 February 2008 have been entered.
2. Claims 40 and 45 are objected to because of the following informalities: they depend from claims 37 and 42, respectively, which were cancelled. Appropriate correction is required. The claims are interpreted as depending from claims 6 and 9, respectively.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims **1, 3, 6, 9, 12, 33, 34, 38-40 and 43-45** are rejected under 35 U.S.C. 102(b) as being anticipated by applicant's admitted prior art, Saito ("Deposition of organic electrodes based on wet process for organic devices"), hereinafter AAPA.
5. Regarding claims **1, 6, 9, 33, 38, and 43** AAPA discloses in Fig 2 a photovoltaic cell and the method of production (fig 1), comprising: a substrate, a first semitransparent electrode (Al) applied to the substrate, a photovoltaically active layer (LB film) comprising an organic material, a second electrode (upper electrode, Qu(TCNQ)) made of an organic material, wherein the first electrode is between the substrate and the photovoltaically active layer, the photovoltaically active layer is between the first and

Art Unit: 2814

second electrodes, the second electrode is opaque (since the Al electrode is the transparent side and lamp light shines from the Al side, see Fig 2b and page 1490 ¶13).

6. Regarding claims **3, 12, 34, 39, 40, 44 and 45**, AAPA discloses wherein the second electrode is a positive electrode (organic electrode has higher work function than first Al electrode, therefore acts as a positive electrode, see page 1490 ¶1-3).

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims **1, 3, 6, 9, 12, 33, 34, 38-40 and 43-45** are rejected under 35 U.S.C. 103(a) as obvious over Sariciftci (US 5,454,880) and Yu (US 6,483,099).

10. Regarding claims **1, 6, 9, 33, 38 and 43**, Sariciftci discloses (col 5 In 35- col 6 In 17) a photovoltaic cell (abstract) and the method of production, comprising: a substrate (glass, col 5 In 36), a first electrode (conducting layer of ITO, col 5 In 40-44) applied to the substrate, a photovoltaically active layer (conjugated polymer, col 5 In 47-col 6 In 4) comprising an organic material, a second electrode (conducting polymer, col 6 In 9) made of an organic material, wherein the first electrode is between the substrate and the photovoltaically active layer, and the photovoltaically active layer is between the first and second electrodes.

11. Sariciftci does not specify wherein the second electrode is opaque and during use of the photovoltaic cell, photons strike the first electrode. However, Sariciftci does disclose that if the second electrode is not transparent, it should cover only a fraction of the device which is exposed to light (col 6 In 15). This disclosure shows that, in the device of Sariciftci, light is incident upon the second electrode side (photons strike the second electrode). However, it also shows that the second electrode may be opaque, since it is recognized that it may impede light.

12. Yu teaches in Fig 1 and Fig 2 that it is well known to form either side of a photovoltaic device to be transparent to incident light. When light is incident from the second electrode side (such as disclosed by Sariciftci), the second electrode is transparent (col 8 In 20-30). When light is incident from the substrate side, both the substrate and first electrode are transparent, while the second electrode is opaque (col 8 In 10-15). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the teachings of Yu on the device and method of Sariciftci since

Art Unit: 2814

the two geometries for photovoltaic cells are suitable alternatives. Art recognized suitability for an intended purpose has been recognized to be motivation to combine.

MPEP 2144.07.

13. Regarding claims **3, 12, 34, 39, 40, 44 and 45**, Sariciftci and Yu disclose wherein the second electrode is a positive electrode (second organic electrode inherently has higher work function than first ITO electrode, therefore acts as a positive electrode).

14. Claims **5, 7, 14-29 and 47-49** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sariciftci and Yu as applied to claims 1, 6 and 9 above, and further in view of Kataoka.

15. Regarding claims **5, 14, 15, 20, 25, 47-49**, Sariciftci and Yu do not specify leakage connectors printed on the second electrode and configured to reduce ohmic losses during use of the cell.

16. Kataoka teaches that a grid of current-collecting electrodes (silver paste) are provided on a photovoltaic electrode for efficient current collection (col 7 ln 61-64). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the teachings of Kataoka on the device of Sariciftci for efficient current collection. This structure meets the limitations of leakage connectors as claimed. The claim language "to reduce ohmic losses during use of the cell" describes an intended use of the leakage connectors. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order

Art Unit: 2814

to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

17. Regarding claims **17, 22 and 27**, Kataoka teaches wherein the leakage connectors are devoid of adhesive (conductive paste of silver, sputtered, col 7 ln 65).

18. Regarding claims **7, 16, 18, 19, 21, 23, 24, 26, 28, 29**, Kataoka teaches wherein the leakage connectors are printed on the second electrode (col 8 ln 5).

19. Claims **8 and 30-31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sariciftci and Yu as applied to claims 1, 6 and 9 above, and further in view of Lamotte (US 6,746,751). Sariciftci and Yu do not specify wherein the second electrode comprises PEDOT. However, Sariciftci does disclose that the second electrode can be polyaniline.

20. Lamotte teaches that PEDOT is a suitable conductive polymer alternative for polyaniline when used as an electrode for a photovoltaic cell electrode (col 15 ln 33 and ln 54). Since the conductive polymers can be applied by printing (col 1 ln 30), they enable fabrications with higher flexibility (col 1 ln 33). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the teachings of Lamotte on the cell electrode of Sariciftci and Yu in order to produce a device with higher flexibility. Replacing polyaniline with PEDOT would be obvious since the two materials are suitable conductive polymers for organic electrodes, art recognized suitability for an intended purpose has been recognized to be motivation to combine. MPEP 2144.07.

***Response to Arguments***

21. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection. The amendment reciting that the second electrode is opaque has been treated by the teachings of Yu, who teaches that it is well known to reverse the direction of incident light detection on photovoltaic devices.

***Conclusion***

22. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN C. INGHAM whose telephone number is (571)272-8793. The examiner can normally be reached on M-F, 8am-5pm.



Art Unit: 2814

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Howard Weiss/  
Primary Examiner  
Art Unit 2814

John C Ingham  
Examiner  
Art Unit 2814

/J. C. I./  
Examiner, Art Unit 2814